

Audiovisual Analytics of social linked data

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Abstract: Audiovisual analytics of social data is useful for State and private management, scientific and individual endeavors. If you have data as information in a computer, and wants to transmit it to an observer or user, the use of visual cues is an obvious, and sometimes considered optimized, choice because of the efficiency and complexity of our visual cognition. Our sonic cognition is sometimes considered of greater complexity, due to patterns of music and spoken language. How to correctly formalize the mapping of data to physical stimuli and then to the perceived stimuli respecting the Webner-Fechner and Steven's laws? Related to sound, most traditional notation and musical qualities respect the Webner-Fechner law, with note grids (e.g. semitones, octaves), respecting the logarithm of frequency: interval = $\log_2(f_1/f_0)$, loudness = $\log_{10}(p_1/p_0)$ Duration seems to be conceptualized as such because musical notation uses the division in two (simple, imperfectus), and three (perfectus) yielding a grid having $d_i = d_{i+1}/2$ and $d_i = d_{i+1}/3$. $durations = 2^{x-i}$ and $= 3^{x-i}$. Which implies $\log_2(dur) = x - i$. A Webner-Fechner compliant relation between the number of the durations and depth of the division $x-i = (4, 8, 16)$ for simple, $(3, 9, 12)$ for compound, $(5, 7, 13)$ complex. 6 is compound in traditional music theory, but is the only one that relates periods of 2 and 3, subdivision of 2 and 3.

1. Introduction

Linked data is useful for data integration from different sources, for semantic representation and manipulation of data, such as by automated inferences, and sound conceptual considerations of both domain and context knowledge. The mapping of data to audiovisual cues involve a number of routines, conceptual frameworks, and data. The scaling and integration factors are decisive in setting of Big Data such as in social data mining. The study of data that expresses human social systems poses ethical and conceptual challenges [?, ?]. An overview of the Linked Open Social Data gathered in RDF and related ontologies and vocabularies can be found in [?, ?, ?]. Some limitations of current linked data standards are described and potential solutions given in [?].

2. Current Framework

We have strived to obtain relevant algebraic, empiric, conceptual, analyses of social structures [?, ?], often supported by software, which is a very formal representation of what is being performed (although also very incomplete). In this section, we focus on current efforts around Audiovisual Analytics.

2.1. AAVO

AAVO is a first tentative ontology for Audiovisual Analytics. Figure [?] depicts the AAVO Core, and both Core and Extended AAVO are well described in [?]. The following concepts are envisioned for the core:

And it might receive other layers of conceptualizations, such as for data type, colors, charts, etc.

Its purposes are: automated inferences and recommendations on contexts involving data visualization; enable relevant theoretical discussions by having an established and formal conceptualization; provide a representation of data that is friendly for both humans and machines (in browsing, discovery, inference); underpin data integration; provide the conceptual and data architecture for the audiovisual analytics software described in the next section.

2.2. *An audiovisual analytics platform of social systems*

A software system, a platform for audiovisual analytics of big data have been envisioned which have the following characteristics:

- Interface has capabilities of making automated and periodic changes of the presentation of the content (data and analyses). This entails a fractal and musical consideration of the audiovisualizations. User might pause and set changing patterns..
- The simultaneous use of both the vision and hearing channels. User might mute or focus on the sonic cues.
- The system has the purpose of providing an aesthetic experience to the user. This includes facilities to render audiovisual media for aesthetic appreciation or attractive representation of analyses [?].
- Keeps records of state through users and sessions. Each session has a set of states, each state a set of interface parametrization and data references. Annotations might be linked to users, sessions, states, data, analysis methods, widgets, etc; and categorized by keywords or simple values.
- Persistence (probably through the web browser's sandbox) to allow a user to reload already downloaded software and data, and to allow a user to work offline.
- Sharing of sessions, states, data, and annotations among users, preferably in real time (as achieved through Meteor.js). Sharing of media to non-users and for presenting results.
- A written interface to control the system which should be suitable for scripting, one line commands, keyboard shortcuts. (The written interface expresses a very broad space of possible commands.)
- Linked data to achieve a formal and browse-friendly representation of data for both humans and machines; for a unified consideration of both data and knowledge architecture; facilitates the linkage of metadata from users; facilitates resources recommendations.
- Emphasis on the analysis of networks and text (and their simultaneous analysis), reason why it is fit for social networks, but also for general complex networks and textual data.
- Designed to be enhanced with use by means of tests with users, of analyses of sessions and states (maybe have facilities to record mouse movement, clicks and keyboard strokes).

The temporal dynamic of the interface is useful to do a rapid scan of the data by parts Observing data by parts is a core procedure in mining big data. Persistence is also valued for the purpose of analyzing big data. Complex networks and text yield a broad user base and set of knowledge fields which might be studied withing the system. The focus on social systems entails analysis results of interest to both the scientific research, and State and private sectors. The artistic course of current and envisioned developments is useful for formal documents but also favors the engagement of layman.

2.3. *Perceptual framework*

Link to AAVO: the three sampling groups.

2.4. *Other: Erds Sectioning, KS-derived statistics, Wordnet, text mining, stability and differentiation, partnerships*

2.5. *What to do?*

We will surely integrate the Hypothesis, Goals, Interaction concepts into the AAVO Core. We should develop the system in Section ?? to some extent, maybe for concept proofs or simple prototyping.

With the research groups @Nuvem, relate the missing concepts in AAVO, enhance the software design of the system, Know about the right tools for visualizing ontologies and social data. For knowing about pertinent analysis methods and known conceptualizations. Virtual reality, visualization and societal groups might want to formalize their own conceptualizations, and concepts related to AAVO might have similar developments or which are confluent (e.g. symbiotic) with Section 2: software theoretical framework, research and institutional experiments and equipment, linked data, and other initiatives or knowledge.

3. References

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